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10/527,768	09/23/2005	Wolfgang Glocker	112740-1060	5165
29177 7590 08/29/2007 BELL, BOYD & LLOYD, LLP P.O. BOX 1135 CHICAGO, IL 60690			EXAMINER KARACSONY, ROBERT	
			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/527,768

Applicant(s)

GLOCKER ET AL.

Examiner

Robert Karacsony

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant's arguments and amendments filed on June 18, 2007 have been received and entered in the case. Claims 35-68 are pending.

#### ***Claim Objections***

1. Claim 53 objected to because of the following informalities: In line 4 of claim 53, applicant recites the limitation "resident frequency". Examiner interprets this limitation as "resonance frequency". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

2. Claims 35-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the examiner what the applicant is trying to claim by the amendments made on lines 7-8 of claim 35. Applicant added the limitation "wherein the first corrective element increases the total current level directly from the circuit board". It is unclear to the examiner how adding a "non-active" element will increase "the total current level directly from the circuit board". Paragraph [0034] discloses "Since the additional corrective element now features current-conductive tracks at the point at which the local current distribution of the total current  $I_1(X)$  of the circuit board LP is less than  $IM_1$ , the total current level can be increased there and, thereby, an evening out of the overall resulting total current can be achieved (compensation effect)". It is understood that the current corrective element evens out the overall resulting total current and not increase the total current level. For examination purposes, examiner interprets the limitation as "wherein the first corrective element has an increased total current level directly from the circuit board".

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3. Claim 35 recites the limitation "the total current level" in lines 7 and 8 of the claim. There is insufficient antecedent basis for this limitation in the claim. For examination purposes, examiner interprets "the total current level" as "a total current level".
4. Claim 68 is rejected for substantially the same reasons as 35, as discussed above.
5. Claims 36-67 are rejected for depending on rejected independent claim 35.
6. Claim 51: It is unclear what applicant means by "ESD". For clarity purposes, examiner requests that applicant define "ESD" in the first instance in the claim.
7. Claims 58-63: It is unclear to the examiner which corrective element the applicant is referring to by the limitation "the respective additional corrective element". For examination purposes, examiner interprets either of the additional corrective elements as "the respective additional corrective elements".

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 35-43, 47, 50 and 52-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips et al. (US 6,421,016, hereafter '016).

Claim 35: '016 teaches a wireless communication device comprising:

at least one circuit board (col. 4/lines 31-36);

at least one antenna (Fig. 1, 102) coupled to the at least one circuit board (col. 3/lines 48-50, antenna is coupled to circuit board through transceiver circuitry) for at least one of emitting and receiving electromagnetic radio energy fields (col. 3/lines 52-53); and

at least one first additional, current-conducting corrective element (Fig. 1, 104) for SAR value reduction (col. 5/lines 14-22) coupled to the circuit board (col. 4/lines 31-36), wherein the first corrective element has an increased total current level directly from the circuit board (col. 5/lines 42-49), and wherein the first corrective element is embodied such that at least one of an amplitude level and a phase angle of electrical currents on the antenna, the circuit board and the corrective element, are adjusted in relation to each other (col. 4/lines 28-58), such that a maximum SAR distribution which results overall as a result of electrical currents in body tissue of a user becomes minimal (col. 5/lines 14-22).

Claim 36: '016 teaches an additional tuning part (108) for tuning at least one of the phase angle and the amplitude level of the electrical current on at least one of the first corrective element and the circuit board (col. 4/lines 28-58), wherein an overlaid total current flow (204) resulting from the electrical currents on the circuit board, the first corrective element and the antenna (col. 4/lines 28-58) has an overall effect of producing a substantially homogeneous SAR distribution (Fig. 2, 204) in one of a specifiable surface area (any select surface area of 108 where the SAR distribution is substantially homogeneous) viewed from a side of the circuit board facing the user (Fig. 2, left side of 108) and in a specifiable volume area (any select volume area of 108 where the SAR distribution is substantially homogeneous) around a coupling structure (108) of the circuit board and the antenna coupled thereto (col. 4/lines 53-58, 102 is coupled to 108 through 208).

Claim 37: '016 teaches at least a second, current-conducting correcting element (108) for additionally tuning the current flow on at least one of the first corrective element and the circuit board (col. 4/lines 28-58) such that a changed electrical current flow (206) on at least one of the first corrective element and the second corrective element is caused (col. 4/lines 28-58) which runs substantially out-of-phase to the current flow on the circuit board (Fig 2. illustrates the magnitude of 206 having a maximum at the top of 104 near antenna 102 and it also illustrates 204 having a minimum at the top of 108 near 102, thus being substantially out-of-phase), wherein, (the remainder limitations of claim 37 are rejected for substantially the same reasons as claim 36, as discussed above) as a result of the overlaid total current flow on the circuit board, at least one of the first corrective element and the second corrective element and the antenna taken together, a substantially homogeneous SAR distribution over one of an overall area of a side of the circuit board facing the user and in a specifiable volume area around a coupling structure of the circuit board and the antenna coupled thereto results.

Claim 38: '016 teaches the first corrective element is electrically connected to ground of the circuit board (col. 4/lines 31-36).

Claim 39: '016 teaches the first corrective element is at least one of coupled capacitively and coupled inductively to the circuit board (Fig. 1, since 104 and the circuit board are close to each other as shown in Fig. 1 there must be capacitive coupling between the two).

Claim 40: '016 teaches the second corrective element is electrically connected to at least one of the first corrective element and the circuit board (Fig. 2, 208; col. 4/lines 31-36).

Claim 41: '016 teaches the second corrective element is at least one of capacitively coupled to the first corrective element (Fig. 1, since 104 and 108 are close to each other as shown in Fig. 1 there must be capacitive coupling between the two).

Claim 42: '016 teaches the second corrective element is an integral component of at least one of the first corrective element and the circuit board (Fig 2 illustrates 108 and circuit board as integrated components).

Claim 43: '016 teaches the second corrective element is provided separately from at least one of the first corrective element and the circuit board (Fig. 1 illustrates 104 and 108 separated from each other).

Claim 46: '016 teaches the second corrective element is embodied as one of a serpentine loop structure (col. 6/lines 64-67) and in a form of at least one flat element (fig. 1).

Claim 47: '016 teaches at least one of the first corrective element and the second corrective element is arranged at a specifiable height from the circuit board (Fig. 1 illustrates 104 at a specific height from the circuit board).

Claim 50: Claim 50 is rejected for substantially the same reasons as claim 47, as discussed above.

Claim 52: '016 teaches the second corrective element runs substantially orthogonally to a longitudinal extent of the first corrective element (Fig. 1 illustrates the bottom part of 108 opposite of antenna 102 running orthogonally to a longitudinal extent of 104).

Claim 53: '016 teaches the second corrective element is positioned and dimensioned in such a way relative to at least one of the circuit board, the antenna and the first corrective

element that a minimum resulting SAR distribution is produced at around a resonance frequency in radio operation of the antenna (Abstract; col. 5/lines 14-22).

Claim 54: '016 teaches the second corrective element is dimensioned such that a component placement surface (surface of circuit board that '110' rests on) of the circuit board enclosed by it corresponds at most to 0.2 to 0.5 times a part of the circuit board surface enclosed by the first corrective element (fig. 1).

Claim 55: '016 teaches at least a third additional, current-conducting corrective element (serpentine portion, col. 6/lines 64-67) on the circuit board coupled and embodied as a tuning part such that for the electrical current generated on the circuit board, an explicit current path extension is effected (by adding the serpentine portion the current path inherently gets extended) while simultaneously substantially retaining original specified length and width dimensions of the circuit board (fig. 1).

Claim 56: '016 teaches the third corrective element is arranged in an area of an end face of the circuit board which lies opposite an end face of the circuit board having a connection area of the antenna (fig. 1).

Claim 57 is similar in scope as claim 55 and is therefore rejected for substantially the same reasons.

Claim 58: '016 teaches the third additional corrective element is assigned to a component placement surface of the circuit board (surface of circuit board that third corrective element rests on) which, when the wireless communication device is worn on the body of the user or when the wireless communication device is brought up to the head area of the user for



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speaking or listening is facing the respective body or head area (the third element will always be facing the respective body or head).

Claim 59: '016 teaches the third corrective element is arranged on a component side of the circuit board opposite the antenna (fig. 1).

Claim 60: '016 teaches the third additional corrective element is positioned such that its imaginary orthogonal projection in relation to a component placement surface of the circuit board substantially lies with a delimitation area spanned by side edges of the circuit board (fig. 1).

Claim 61: '016 teaches the third additional corrective element is positioned such that its imaginary orthogonal projection in relation to a component placement surface of the circuit board substantially lies with a delimitation area spanned by side edges of the circuit board (fig. 1).

Claim 62: '016 teaches the third corrective element is at least one of an electrically conductive material (Abstract).

Claim 63: '016 teaches the third corrective element is formed by a single layer covering (fig. 1).

Claim 64: '016 teaches at least one of the corrective elements is formed by at least one coating layer in at least one of a lower shell and a upper shell of a housing of the wireless communications device (fig. 1).

Claim 65: '016 teaches at least one of the corrective elements is manufactured in punch/bend technology (this limitation merely recites a method of forming a device. The method of forming a device is not germane to the issue of patentability of the device itself,

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therefore, these limitations have not been given patentable weight) and is arranged at a specifiable height above a component placement surface of the circuit board (fig. 1).

Claim 66: '016 teaches the circuit board is substantially embodied in a rectangular shape (Fig. 1).

Claim 67: '016 teaches the antenna is embodied as one of a  $\Lambda/4$  antenna and a PIFA antenna (col. 7/lines 4-11) which together with the circuit board form a radiating dipole (the antenna and 108 are center fed by transceiver circuitry 110 which form a dipole antenna).

Claim 68: Claim 68 is rejected for substantially the same reasons as claim 1.

10. Claims 35, 37, 44, 45, 49 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Perrotta et al. (US 6,246,374, hereafter '374).

Claim 35: '374 teaches a wireless communication device with a reduced SAR value, comprising:

at least one circuit board (col. 3/line 8);

at least one antenna (Fig. 2, 16) coupled to the at least one circuit board (col. 2/lines 13-15; 16 is coupled to 18 which is then coupled to the circuit board, (col. 3/lines 40-43)) for at least one of emitting and receiving electromagnetic radio energy fields (col. 2/lines 17-20); and

at least one first additional, current-conducting corrective element (Fig. 2, 18) for SAR value reduction (col. 3/lines 8-14) coupled to the circuit board (col. 3/lines 40-43), wherein the first corrective element has an increased total current level directly from the circuit board (col. 3/lines 3-8), and wherein the first corrective element is embodied such that at least one of an amplitude level and a phase angle of electrical currents on the antenna, the circuit board and the corrective element are adjusted in relation to each other (the effects of coupling between 16,

circuit board and 18 results in their currents adjusting in such a way with each other that the SAR distribution becomes minimal), such that a maximum SAR distribution which results overall as a result of electrical currents in body tissue of a user becomes minimal (the effects of coupling between 16, circuit board and 18 results in their currents adjusting in such a way with each other that the SAR distribution becomes minimal).

Claim 37: '374 teaches at least a second, current-conducting correcting element (54, fig. 5) for additionally tuning the current flow on at least one of the first corrective element and the circuit board such that a changed electrical current flow (current caused by addition of '54') on at least one of the first corrective element and the second corrective element is caused which runs substantially out-of-phase to the current flow on the circuit board (the addition of element '54' will cause to the total current of the device to be adjusted with respect to phase and amplitude, the phase being "substantially out-of-phase" to the current flow on the circuit board), wherein, as a result of the overlaid total current flow on the circuit board, at least one of the first corrective element and the second corrective element and the antenna taken together, a substantially homogeneous SAR distribution over one of an overall area of a side of the circuit board facing the user and in a specifiable volume area around a coupling structure of the circuit board and the antenna coupled thereto results (the addition of element '54' will cause to the total current of the device to be adjusted, resulting in a reduced SAR, interpreted to be "substantially" homogeneous SAR distributions).

Claim 44: '374 teaches the first corrective element (184) is embodied as a loop (Fig. 4) which at least partly extends along side edges of the circuit board (Fig. 4).

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Claim 45: '374 teaches the loop for the first corrective element is substantially embodied as a rectangle (Fig. 4).

Claim 49: '374 teaches the first and second corrective elements are substantially positioned in a same layer plane (fig. 5).

Claim 51: '374 teaches the second corrective element is formed by a metallic display window (col. 3/lines 49-54).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over '016.

Claim 48: '016 teaches all of the limitations of claim 47, as discussed above. '016 fails to teach the height is between 0.1 and 0.6 cm away from a component placement surface of the circuit board. However, it well known in the art of mobile communication terminals that it is highly demanded to reduce the size of the terminal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have reduced the height of the corrective elements of '016 between 0.1 and 0.6 cm, since it would have been desirable to reduce the size of the terminal at the time the invention was made.

*Response to Arguments*

13. Applicant's arguments filed June 18, 2007 have been fully considered but they are not persuasive.

14. Regarding the arguments on page 9, lines 18-22 of the remarks: Applicant added the limitation "wherein the first corrective element increases the total current level directly from the circuit board". It is unclear to the examiner how adding a "non-active" element will increase "the total current level directly from the circuit board". Paragraph [0034] discloses "Since the additional corrective element now features current-conductive tracks at the point at which the local current distribution of the total current  $I_1(X)$  of the circuit board LP is less than  $IM_1$ , the total current level can be increased there and, thereby, an evening out of the overall resulting total current can be achieved (compensation effect)". It is understood that the current corrective element evens out the overall resulting total current and not increase the total current level.

15. Regarding the arguments that Perrotta fails to teach SAR distribution: Examiner notes that Perrotta does in fact teach SAR reduction. It is well known that the parasitic element of Perrotta will not only increase the gain of the antenna but also reduce the amount of radiation absorbed by the user's head, which is SAR reduction. As can be seen in fig. 1, the radiation is directed away from the user's head, because of parasitic radiator element '18'.

*Conclusion*

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Karacsony whose telephone number is 571-270-1268. The examiner can normally be reached on M-F 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RK *RK*

/Hoang V Nguyen/  
Primary Examiner, AU 2821